ABSTRACT OF THE INVENTION

Provided is an optical apparatus and method wherein power transfer coefficients arising from SRS are measured at a designated co-location point and the power of dithers, which are impressed on the channels of a multiplexed optical signal propagating through the optical apparatus, is measured at each co-location point. Within the optical apparatus distances between co-location points are short and the power transfer coefficients are effectively constant. Consequently, the power of each channel of the multiplexed optical signal at the co-location points is obtained from the power of the dithers at a respective one of the co-location points and the power transfer coefficients measured at the designated co-location point. In some embodiments, information on the channel power at the co-location points is used to provide instructions for compensating for fluctuations in channel power and/or channel count at an input and/or channel count within the optical apparatus.